

medley Farm  
6.8  
**DRAFT**

## MEDLEY FARM RD/RA PROJECT CHANGE NOTICE

PROJECT CHANGE NO. MF - 003

DATE: October 8, 1992

### AFFECTED DOCUMENT:

Medley Farm Site Field Sampling and Analysis Plan (FSAP), issued June, 1992

### BACKGROUND:

RMT is presently developing the Preliminary Remedial Design for the Medley Farm Site. Capture zone modelling, utilizing the GPTRAC modules of the WHPA modelling series, is being performed to select the most appropriate locations for installation of ground water recovery wells. Outputs from this model are greatly effected by differences in hydraulic conductivity and the saturated thickness of the aquifer. Since the saturated thickness of the aquifer has not been determined and the assumptions used to estimate hydraulic conductivity values at the site are being re-evaluated, we are proposing to conduct two limited pump tests to improve our understanding of site ground water flow conditions. This will provide us with the information necessary to calculate the saturated thickness of the aquifer and refine the hydraulic conductivity estimates. By better defining these parameters we will be able to develop a more accurate preliminary design, leading to the installation of three recovery wells and full-scale pumping tests on these units. To accomplish this work, the following modifications to the FSAP are proposed.

### PROPOSED MODIFICATIONS:

The following sections should be inserted into the FSAP beginning on page 9-5:

#### **9.5 In-Situ Hydraulic Conductivity Testing**

As deemed necessary, *in-situ* hydraulic conductivity tests may be conducted on select monitoring wells during the course of the RD/RA. Rising and/or falling-head, single-well, response tests will be performed on these monitoring wells. The necessary water displacement will be accomplished through the use of a PVC "slug" or equivalent material attached to a cord. The "slug" will then be either lowered into or pulled from an equilibrated well, thereby displacing water. Water level measurements will be collected prior to displacement and at various times as the water level re-equilibrates. A record of water level recovery with time will be used to estimate the horizontal conductivity of the formation immediately surrounding the well. Determination of hydraulic conductivity will be based on standard methods previously described by Bouwer and Rice (1969) and Bouwer (1989).

#### **9.6 Interim Ground Water Pumping Tests**

Two interim ground water pumping tests will be performed in 2-inch monitoring wells (SW-4 and SW-108) at the Medley Farm Site. The purpose of these tests is to better define the hydraulic characteristics of the aquifer (i.e., hydraulic conductivity and aquifer thickness) so that preliminary Capture Zone modelling efforts can more accurately predict the flow rate and number, and location of the ground water recovery wells. Methods described by Hantush (1962 a,b) will be used to evaluate the drawdown versus time test data.



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## PROPOSED MODIFICATIONS (Continued):

### 9.6.1 Pumping Wells

Monitoring wells SW-4 and SW-108 will be used as pumping wells for these tests. Both wells are constructed with two-inch nominal casing and screen. A submersible pump will be installed in the pumping well and pumped at a rate and period of time to be determination in the field. The pump will be installed with a flow control valve and flow meter capable of measuring flow to 0.1 gallons per minute. The flow meter will also utilize a flow totalizer.

Ground water removed from the pumping wells will be discharged to an open top 55-gallon drum equipped with an aspirator to air-strip volatile organic compounds. Treated ground water will then flow to a trench installed in the ground and re-infiltrate into the subsurface.

### 9.6.2 Monitoring Wells

When pumping from monitoring well SW-4, water level data will be recorded in wells MD-2A, BW-105, and BW-111. Each of these wells and the pumping well will be equipped with pressure transducers to automatically record changes in water levels. When pumping from monitoring well SW-108, water level data will be recorded in observation wells SW-201, BW-201, SW-202, BW-202, and BW-108. As with well SW-4, all wells will be equipped with pressure transducers to automatically record changes in water level.

### 9.6.3 Duration

These pumping tests should generally last for approximately 10 - 30 hours each. The length of the test, however, is dependent upon reaching equilibrium pumping conditions. Data generated in the field will be plotted and compared to type curves to determine the test end point.

Prior to start-up, a step drawdown test will be performed to determine the optimum pumping rate for the test. Based on data presented in the Remedial Investigation report and preliminary modelling by RMT, these pumping wells may be capable of sustained pumping rates of between 2 and 5 gallons per minute. Following completion of the step drawdown test, the system will be shut down and allowed to equilibrate.

Following the required equilibration period, each pump test will be initiated. The pump discharge rate will be set at the optimum rate established during the step drawdown test. Adjustments will be made as frequently as necessary to maintain a pumping rate that does not vary by more than  $\pm 10$  percent.

Water level measurement will be recorded in the pumping wells and observation wells at the following intervals.

<u>Stage of Test</u>	<u>Interval</u>	<u>Duration</u>
Pre-test	10 minutes	1 hour
Pump testing	15 sec	15 min
	30 sec	30 min
	1 min	60 min
	10 min	120 min
	15 min	360 min and up

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## ED MODIFICATIONS (Continued):

At the completion of the test, all equipment will be turned off and removed from the wells. Downhole equipment and piping will be decontaminated according to the procedures described in Section 5.5.2 of the FSAP before being reused.

The following references should be added to Section 12 of the FSAP:

7. Bouwer, H. 1989. The Bouwer and Rice Slug Test - An Update. Ground Water, pp. 304-309.
8. Bouwer, M. and R. C. Rice. 1976. A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells. Water Resources Research. Vol. 12, No. 3. pp. 423-428.
9. Hantush, Mahdi S. 1962. Aquifer Tests on Partially Penetrating Wells, American Society of Civil Engineers. Vol. 127, Part 1. pp. 284-308.
10. Hantush, Mahdi S. 1962. Drawdown Around A Partially Penetrating Well, American Society of Civil Engineers. Vol. 127, Part 1. pp. 268-283.

## DISTRIBUTION:

Ralph Howard (US EPA), Richard Haynes (SC DHEC), Medley Farm Site Steering Committee  
Distribution, File 938.08 (C)

DATE: September 1, 1992

US EPA REGION IV

RED BY: Mark A. Miesfeldt

VED BY: RMT Project Coordinator

APPROVED BY:

RMT Project Manager

TITLE:

DATE:

ID BY: MEDLEY FARM SITE STEERING  
COMMITTEE REPRESENTATIVE

# MESSAGE CONFIRMATION

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# FAX TRANSMITTAL COVER SHEET

Name(s) of Recipient(s) MR. RALPH Howard	Name of Sender: Steve Webb
Recipient's Company Name: US EPA Region IV	Date: Oct 8, 1992
Recipient Fax #: (404) 347-1695	Project Name: Medley Farm
	Project No.: 938.04
	Number of Pages (including this page): 4

## Special Instructions:

Ralph,

Here is draft of PCN for preliminary pump tests. Please review and comment ASAP so final copies can be sent out. I will send your copies of references with final draft. As always, call if there are questions.

Thank

Steve

If you do not receive all pages, please call (803) 281-0030 as soon as possible.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
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FACSIMILE TRANSMITTAL COVER SHEET

Date: 10-14-92 Time: 2:10 ☐ a.m. ☒ p.m.

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Company/Organization: SCDHEC  
Bureau Solid/Haz Mgmt, Div. Hydrogeology

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Number of Pages Sent (Including This Cover Sheet): 4

Please contact Ralph Howard if this fax is received poorly or incomplete.

FROM: Ralph O. Howard, Jr., Remedial Project Manager  
South Carolina Section  
North Superfund Remedial Branch  
Waste Management Division

Phone Number: (404) 347-7791  
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NOTES: Billy,  
Here are proposed specifics from RMT at  
Medley, on the proposed pump tests. Let's talk  
tomorrow or Fri. -

Ralph H.